6 OTHER NEPA INFORMATION

The following chapter contains other NEPA information for the proposed NASA Ames Development Plan alternatives regarding local short-term uses versus long-term productivity, irreversible and irretrievable commitments of resources, growth-inducing effects, cumulative effects, and the project's relationship to federal environmental laws and executive orders.

6.1 Local Short-Term Uses of the Environment Versus Long-Term Productivity

NEPA requires that an EIS consider the relationship between short term uses of the environment and the maintenance and enhancement of long-term productivity. This consideration is especially relevant in projects that affect natural resource areas, where resources could be extracted or depleted in the short term to the detriment of the long-term maintenance of these resources.

The proposed NASA Ames Development Plan would not harm long-term productivity or the availability of natural resources over the long-term. As documented in this EIS, no natural resources would be extracted or impaired as a result of this project. In fact, the NADP would result in positive long-term impacts, since the Plan's implementation would allow NASA to continue its mission at Ames Research Center and to engage in new partnerships with private and academic institutions in astrobiology, nanotechnology, and space research, while protecting wetlands and other wildlife habitat.

6.2 Irreversible and Irretrievable Commitments of Resources

The proposed NADP alternatives would not cause any significant new irreversible and irretrievable commitments of non-renewable resources to uses that future generations would be unable to reverse. Most development under the NADP would occur on land that is already urbanized, so the new development would not alter the fundamental urbanized character of Ames Research Center.

The only exception to this statement would occur in the Bay View area, where construction would occur on undeveloped land, committing open lands to residential use. This would not constitute a significant impact in and of itself, since the land that would be converted does not currently harbor critical habitat or other protected natural resources. No impacts associated with the conversion of this land are found in this EIS.

6.3 GROWTH-INDUCING EFFECTS

A project is considered to be growth-inducing if it fosters economic or population growth beyond the boundaries of the project site. Typical growth inducements might be the extension of urban services or transportation infrastructure to a previously unserved or under served area or the removal of major boundaries to development.

The proposed NADP alternatives would result in the creation of new jobs and housing, which would be likely to induce population and housing growth in the region. These impacts are fully covered in Chapter 4 of this EIS, particularly in Section 4.14, which addresses socio-economic impacts including the alternatives' impacts on the regional housing supply. As noted in Section 4.14, impacts on the regional housing supply would be significant and unavoidable, even though the project would supply on-site housing for employees and students.

6.4 CUMULATIVE EFFECTS

Cumulative impacts occur when two or more individual effects together create a considerable environmental impact, or if they compound or increase other environmental impacts. Cumulative impacts are those that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts from the NADP alternatives combined with other projects in the vicinity of Ames Research Center have been addressed throughout this EIS. Chapter 2 lists the cumulative projects that were considered in this EIS. All of the analyses in Chapter 4 address future cumulative conditions with these cumulative projects. Table 6.4-1 provides a summary of those issue areas under which the implementation of the NADP Preferred Alternative would result in environmental and/or cumulative impacts.

The most significant area in which cumulative impacts could occur is related to traffic, which is considered in Sections 3.3 and 4.3 of this EIS. All traffic analyses in this EIS are based on a future baseline condition that include expected future development at Ames Research Center as well as the cumulative projects expected outside ARC. All impacts and mitigation measures in the traffic analysis address these future cumulative conditions.

With regards to air quality, the South Bay and greater Bay Area are experiencing continued growth in population and vehicle use that will affect the emission of regional pollutants such as hydrocarbons and oxides of nitrogen. Current projections are that regional emissions of these pollutants will decrease in the future, despite cumulative growth in population and vehicle use, due to regional programs for reducing emissions that are in place or currently being considered. Thus the project would not be expected to add to significant cumulative air quality impacts, since air quality in the region is expected to improve over time. However, cumulative projects in the region are expected to result in increased exposure to toxic air contaminants, as explained in Section 4.4.

The noise analysis in the EIS is based on the traffic analysis, so it covers cumulative conditions in the same manner as the traffic analysis.

Cumulative impacts on infrastructure are addressed in Section 4.5. The cumulative impacts to the sewer piping systems of Sunnyvale and Mountain View were based on the pending projects that will discharge to the same main lines as Ames Research Center. The cumulative impacts to the sewer treatment plants were based on all of the pending projects in each city since they all will ultimately discharge to the plants. The cumulative impacts to the water supply were based on all of the pending projects in both cities combined since Ames Research Center, Sunnyvale and Mountain View all utilize the same source for water.

Cumulative conditions relative to services and socio-economic conditions are addressed in Sections 3.6, 3.12, 3.14, 4.6, 4.12 and 4.14, which include information on cumulative service, recreation, population and employment trends for the area around Ames Research Center. All impacts in Sections 4.6, 4.12 and 4.14 have been identified relative to future cumulative conditions.

Cumulative impacts related to biological resources are addressed in Section 4.9, which explains that the cumulative projects beyond the ARC studied in this EIS would have few impacts on biological resources. However, past projects in the South Bay region have combined to greatly reduce biological resources from levels which previously existed.

Cumulative impacts related to aesthetic resources are addressed in Section 4.11. The proposed project could combine with baseline development to create a visual impact through removal of protected trees within the Ames Research Center. However, Mitigation Measure AES-6, which includes compliance with the City of Sunnyvale's tree ordinance, would reduce these potential impacts to less-than-significant levels.

Cumulative impact analysis is not as relevant for the other environmental factors addressed in this EIS. In most cases, this is because the project itself

TABLE 6.4-1 **SUMMARY OF PROJECT AND CUMULATIVE IMPACTS**

	NADP Preferred Alternative		
Issue	**Without Mitigation**	**With Mitigation**	**Cumulative**
Public Policy			
Land Use			
Traffic and Circulation	X	X	X
Air Quality	X	X	X
Infrastructure and Drainage	X		X
Services	X		X
Hazardous Materials and Site Contamination	X		
Geology	X		
Biological Resources	X		X
Noise	X		
Aesthetics	X		X
Recreation	X		
Cultural Resources	X		
Socio-Economic Conditions	X	X	X

Note: X indicates a significant impact is identified for the preferred alternative or as a result of cumulative projects.

would have no impact on the environmental factor, so there would be no impact from the project which could join with other similar impacts to from a cumulative impact. This is true for public policy and land use. In other cases, impacts would only occur on site and would be mitigated completely, so there would be no chance that impacts would join with other off-site impacts to

become cumulatively significant. This is true for hazardous materials, geology, and cultural resources.

6.5 COMPLIANCE WITH RELEVANT ENVIRONMENTAL LAWS AND EXECUTIVE ORDERS

This section documents the NADP's compliance with federal environmental laws and executive orders.

A. Executive Orders

1. Executive Order 11593 (Historic Properties)

Executive Order 11593 and Section 110 of the National Historic Preservation Act of 1996 (NHPA) provide direction for inventorying and evaluation of historic properties, and for initiating measures and procedures to provide for the maintenance, through preservation, rehabilitation, or restoration, of federally owned and registered sites.

As discussed in Section 3.13, the Ames Research Center site has been systematically surveyed for historic resources as part of a National Park Service survey of NASA centers and various Section 106 surveys.

Several buildings in the Shenandoah Plaza District and Ames Campus areas have been added to the National Register of Historic Places (NRHP). As discussed in Section 4.13, within the Ames Campus, none of the alternatives would result in adverse impacts on any of the buildings listed or eligible for listing on the NRHP. Any rehabilitation that could potentially have an adverse impact in the Shenandoah Plaza District would comply with the Secretary of Interior's Standards, as discussed in Section 4.13. Furthermore, NASA would follow design guidelines for new construction to maintain visual integrity in the District. Modifications, removals, or relocations of contributing elements within the District would follow full consultation pursuant to Section 106 of the NHPA.

2. Executive Order 11988 (Floodplain Management)

Executive Order 11988 directs federal agencies to enhance floodplain values, to avoid development in a floodplain whenever there is a practicable alternative, and to avoid to the extent possible adverse impacts associated with occupancy or modifications of floodplains.

As discussed in Section 3.5, areas within the Ames Research Center site have experienced flooding in the past. Alternatives 2, 4 and 5 would construct housing, child care and other facilities within the 100-year floodplain. However, the site would be filled prior to construction to raise its elevation above the flooding level, thereby avoiding any potential flood impact. A floodplain analysis is included in Section 6.5.C.

3. Executive Order 11990 (Protection of Wetlands)

Executive Order 11990 directs federal agencies to enhance wetland values, avoid development in wetlands whenever there is a practicable alternative, and to the extent possible, avoid adverse impacts associated with occupancy or modifications to wetlands. The Clean Water Act regulatory process requires compliance with federal "no net loss of wetlands" policies and includes a public and agency review process and Clean Water Act Section 404 (b)(1) alternatives analysis that would in practice be likely to require avoidance of impacts on aquatic habitats or compensation for losses in extent and values.

To minimize impact on wetlands, measures would be taken to avoid construction and/or minimize fill activities and other disturbances in jurisdictional wetlands. Subsequent to the US Army Corps of Engineers approval, a wetland enhancement plan for Alternatives 2 and 4 would also be developed for the restoration of functions and values of aquatic habitats. All construction near or adjacent to wetlands would implement standard Best Management Practices to minimize runoff into sensitive areas.

Where some alternatives would result in the loss of small amounts of jurisdictional wetlands, development would be reconfigured to avoid wetland areas identified in the wetland delineation for the project. Alternatively, NASA would develop a wetland mitigation plan to mitigate for any loss of wetlands under the project. This plan would also be submitted for approval to the US Army Corps of Engineers.

Wetlands would be further protected by managing potentially-contaminated runoff using storm water Best Management Practices. Where feasible, the use

of pesticides on landscaping near native habitats would be prohibited. Runoff would be minimized in some areas by using minimal irrigation systems.

4. Executive Order 12873 (Federal Acquisition, Recycling and Waste Prevention)

NASA complies with Executive Order 12873 by incorporating a comprehensive, integrated, and cost-effective approach to waste reduction. As indicated in the discussion on the Solid Waste Disposal Act, below (Section 5.5.B.13), development under the NADP would comply with this executive order by continuing to implement NASA's existing solid waste management, diversion and recycling policies.

5. Executive Order 12898 (Environmental Justice)

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", directs federal agencies to assess whether their actions have disproportionately high and adverse effects on minority and low-income populations.

There are both low income and minority communities in the ARC area, as discussed in Section 3.14. However, none of the five proposed alternatives would result in any disproportionate adverse impact on minority populations or low-income populations, as explained in Section 4.14.

6. Executive Order 13045 (Protection of Children from Environmental Health Risks and Safety Risks)

Executive Order 13045 requires federal agencies to assign a "high priority" to identify and assess environmental health risks and safety risks that may disproportionately affect children, and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

As discussed in Section 4.7, NASA is currently conducting a Human Health Risk Assessment to predict site specific risk for exposure to various hazardous materials, including lead paint and several chemicals. NASA has committed to

measures to protect children from hazardous materials. For example, where there is a possibility of children digging down through layers of clean fill over contaminated soils, a protective membrane would be installed to prevent it.

As described in subsection B.2.c of Section 4.7, the HHRA found that most risks associated with contaminants from Navy, NASA and MEW companies are below or within the EPA risk management range.

As identified in this Final EIS, proposed childcare facilities in the Bay View area could be located near the Mountain View Industrial Park, where some businesses handle hazardous materials. Spills or releases at these businesses could expose children to hazardous air pollution. This would be a significant impact. Mitigation Measure HAZ-2 would ensure that childcare facilities would be located at least 305 meters (1,000 feet) from the industrial area of Mountain View, which would limit the area in which industries handling hazardous materials would be prohibited. Mitigated Alternative 5 would locate childcare facilities at least 402 meters (1,320 feet) from the industrial area of Mountain View in accordance with City of Mountain View policy.

NASA also studied the effects of noise in relation to the location of proposed housing and childcare facilities. As discussed in Section 4.10, new development in the NRP area under Alternatives 2 through 5 could create significant land use incompatibilities, since all four propose the development of apartment-style housing and childcare on NRP Parcel 6, a small portion of which is exposed to a DNL of more than 65 dB. This is an unacceptable noise level for residential uses. Therefore, this small area would be used for parking or other non-residential uses. As Alternatives 2, 4 and 5 would locate childcare in the Bay View in Parcel 2, which is located outside of the 60 dB contour, no adverse impact would be expected.

7. Executive Order 13101 (Waste Prevention, Recycling and Federal Acquisition)

Executive Order 13101 articulates federal policy regarding waste reduction. Under this policy, federal agencies are guided to incorporate waste reduction

into daily operations, to work to increase markets for recovered materials, and to prevent pollution.

In compliance with this executive order, the Ames Research Center has implemented recycling programs to reduce waste. Ames Research Center is committed to reducing the volume of solid and hazardous waste generated annually through source reduction and recycling. The current agency-wide goal is to divert 35 percent of solid waste away from landfills by 2010 compared with the 1997 baseline. However, Ames is committed to a more aggressive program and has promulgated guidelines for the purchase of a variety of recycled contents materials from paper products to vehicular products. In addition, Ames has set up a complex system of accountability and reporting to ensure that at least the following items are being recycled wherever feasible; white paper, cardboard, scrap metal, wood and steel. Ames is also committed to purchasing products with recycled or recovered materials content in the percentages specified by the current Federal EPA Guidelines. All of these policies and programs would apply to new development under the NADP.

8. Executive Order 13112 (Invasive Species)

Executive Order 13112 recognizes the ecological impacts of invasive species, discusses control measures to be taken to prevent the introduction of invasive species and outlines the duties of each federal agency whose actions could affect the status of invasive species. It essentially directs federal agencies to prevent the introduction of potentially invasive exotic species and to control invasive exotics on land for which they are responsible.

Section 3.9 states that invasive exotic weeds that crowd out native species grow in some areas of the site. Measures that would minimize the impact of invasion by non-native species and thereby comply with this Executive Order are identified in Section 4.9. For example, landscaping would not use invasive plants and controls to prevent the spread of weeds would be implemented.

9. Executive Order 13123 (Efficient Energy Management)

Executive Order 13123, Greening the Government through Efficient Energy Management, calls for federal agencies to improve the energy efficiency of their buildings, promote the use of renewable energy, and reduce greenhouse gas emissions associated with energy use in their buildings, among other energy-related requirements. It also mandates an energy use reduction of 35% below 1985 levels by 2010. Signed in June of 1999, Executive Order 13123 also directed the Department of Energy to work with other federal agencies to develop a variety of guidance, criteria, tools, and other information to assist agencies in implementing the provisions of the order.

To comply with this order and to reduce energy demand from new development, NASA's design guidelines require that new buildings be designed to be energy efficient. Buildings constructed under the NADP would be 10 percent more efficient then California's Title 24 standards, which by themselves reflect a high degree of energy efficiency. Thus development under the NADP would comply with this executive order.

10. Executive Order 13148 (Environmental Management)

Executive Order 13148, "Greening the Government through Leadership in Environmental Management," directs federal agencies to integrate environmental accountability into day-to-day decision making and long-term planning processes across all agency missions, activities and functions.

As noted in Section B.2.a of Chapter 2 of this EIS, the NADP has been developed to reflect the concept of sustainable development in all aspects of the project, including trip reduction, on-site housing, pedestrian-oriented design, water conservation, energy conservation, habitat preservation and waste reduction. Thus development under the NADP would comply with this executive order.

11. Executive Order 13149 (Reduction in Petroleum Consumption)

Executive Order 13149, "Greening the Government Through Federal Fleet and Transportation Efficiency", directs federal agencies to reduce petroleum

consumption through the improvements in fleet fuel efficiency, the use of alternative fuel vehicles (AFV) and the use of alternative fuels.

These strategies for reducing petroleum consumption are in place at the ARC and would continue under the NADP. Moreover, development under the NADP would include a comprehensive Transportation Demand Management (TDM) program and on-site housing that would both reduce vehicular trips, thereby lessening petroleum use.

12. Executive Order 13150 (Federal Workforce Transportation)

Executive Order 13150, "Federal Workforce Transportation", directs federal agencies to "implement a transportation fringe benefit program." This program would allow qualified federal employees the option to exclude from taxable wages and compensation commuting costs associated with the use of mass transportation and van pools.

This type of program is already available at ARC, and would continue under the NADP. Additionally, the NADP TDM Program would include provision of an "Ecopass" for all on-site employees to encourage employees to commute via transit.

B. Federal Laws

1. Americans With Disabilities Act of 1990

Federal guidelines published in accordance with the Americans With Disabilities Act (ADA) define specific requirements for disabled access to parking facilities, pathways, and buildings. The accessibility requirements apply to private entities that provide public accommodations and to government facilities. All new construction under the NADP would be required to be in full compliance with the ADA.

2. Clean Air Act

Section 118 of the Clean Air Act requires that federal facilities comply with existing federal, state and local air pollution control laws and regulations. NASA must ensure that activities within its administrative jurisdiction meet existing and laws and regulations, and that external sources of air pollution are controlled or mitigated to the extent possible to protect the air quality and resource values.

When total direct and indirect emissions caused by a federal action exceed specified thresholds, actions that cause emissions of nonattainment pollutants are required to complete a formal conformity determination. The conformity analysis evaluates whether a proposed action conforms to the State Implementation Plan (SIP) for a particular pollutant. The general conformity rule applies to any federal action in the Bay Area causing more than 100 tons per year of ROG, NO_x or CO. The analysis considers only those emissions that are reasonably foreseeable and that NASA can practicably control through continuing program responsibility.

In any given year in which construction occurs, emissions of ozone precursors associated with combined construction and operation could exceed levels set forth in the Clean Air Act General Conformity Regulation. To mitigate this and comply with the Act, NASA and its partners would schedule construction to ensure that annual emissions of ozone precursors associated with construction and operation do not exceed a cumulative total of 100 tons per year.

The air quality analysis described in Appendix D indicates that predicted carbon monoxide concentrations associated with the project would not cause or contribute to any new violation of the NAAQS for carbon monoxide or increase the frequency or severity of any existing violation of the carbon monoxide NAAQS.

Pursuant to Section 176 of the Clean Air Act (42 U.S.C. 7476(c)), NASA has determined that implementation of the Proposed Action (Alternative 5) will

conform to the Bay Area Air Quality Management District (BAAQMD) State Implementation Plan for Carbon Monoxide. The applicable state implementation plan for carbon monoxide is the Bay Area Redesignation Request and Maintenance Plan for the National Carbon Monoxide Standard, approved by the EPA on June 1, 1998.

Facilities that could be potential sources of air pollution, such as planned laboratories, would be subject to the permitting regulations and requirements of the BAAQMD. Any uses of toxic gases would comply with the Santa Clara County Toxic Gas Ordinance. Long term residential uses would be avoided at areas located over high concentration zones over the Regional Plume.

Potentially unhealthy air pollutant concentrations of PM_{10} would result from construction emissions associated with new development and renovation of existing facilities. A series of measures to control dust generation, including all measures recommended by BAAQMD, would be incorporated into construction contract specifications and enforced by NASA. Measures to reduce emissions of nitrogen oxides and particulate matter from diesel fuel combustion will also be evaluated and implemented where feasible and reasonable.

3. Noise Control Act

The federal Noise Control Act of 1972 requires compliance with state and local requirements respecting control and abatement of environmental noise and provision of an environment free from noise that jeopardizes health or welfare. Federal management of highway noise is subject to Federal Highway Administration regulations. Federal or federally aided highway projects, and construction of highway projects, must conform with the FHWA noise standards.

Section 3.10 describes the Department of Labor's noise exposure standards for US workers and NASA's own Health Standard on Hearing Conservation, which is applicable to all NASA employees and NASA-controlled, government-owned facilities. NASA's policy is to control noise generated by

its operations and to prevent occupational hearing loss. Though no state or local noise criteria are binding on the type of noise to be created by the NASA Ames Research Center, NASA uses federal, state and local criteria to provide guidance in determining noise impacts, as described in Section 3.10.

Short-term noise disturbances could result from construction activities at the Ames Research Center site. As described in Section 4.10, noise mitigation measures would be included in project design and development, and building designs would provide appropriate Noise Level Reduction. Furthermore, NASA would assign a Noise Disturbance Coordinator to deal with construction-related noise. During development and construction, contractors and equipment operators would be required to comply with local noise ordinances.

As discussed in Section 4.10, the only long-term effect that development of the NADP could have on the noise environment in the area would result from increased vehicular traffic on the street network. The analysis described in Section 4.10 found that increased traffic would not result in any significant adverse impacts.

4. Clean Water Act

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) are responsible for ensuring implementation of and compliance with the provisions of the federal Clean Water Act (CWA) and California's Porter-Cologne Water Quality Control Act. Along with the SWRCB and RWQCB, water quality protection is the responsibility of numerous water supply and wastewater management agencies, as well as city and county governments, and requires the coordinated efforts of these various entities.

Section 401 of the CWA gives individual states the authority to issue, waive, or deny certification that a proposed activity is in conformance with state water quality standards (Water Quality Certification). The State's Regional Water Quality Control Boards review projects, including those that require permits

from the Corps under Section 404 of the CWA. Corps permits are required for all discharges of dredged or filled materials into US waters and wetlands. The Ames Research Center is under the jurisdiction of the San Francisco Bay Water Quality Control Board.

In addition, a revised amendment to the existing construction storm water permit (Water Quality Order 99-08-DWQ)was adopted on August 19, 1999. This amendment includes additional sampling requirements upstream and downstream of a discharge point. The first objective is to identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed as part of Clean Water Act Section 303(d). The second objective is to identify, for all construction activity, a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff. The amendment includes additional requirements for implementation, source identification and monitoring programs. The construction storm water permit for the proposed project would be updated to include the provisions of this amendment.

NASA is planning upgrades to the storm water collection system. As described in Section 3.5, a new storm drain system will be constructed to accommodate the new site layout. Potential construction impacts on water quality, especially with respect to wetlands, are discussed in Section 4.9. NASA would require that all construction near wetland areas implement Best Management Practices to minimize runoff. Post construction planting and other measures would help control erosion.

5. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 addresses actions affecting coastal zones and requires that federal actions be consistent with state coastal zone management plans. Under the CZMA, federal actions must be consistent with local coastal zone management programs. In California, these programs generally include the California Coastal Act and Local Coastal Plans. In the

case of the NASA Ames Research Center, the operative coastal zone management program is administered by the San Francisco Bay Conservation and Development Commission (BCDC) and generally consists of the McAteer-Petris Act, BCDC's *San Francisco Bay Plan*, special area plans adopted by BCDC, and BCDC's regulations.

Under the McAteer-Petris Act, BCDC has authority over San Francisco Bay, including all sloughs, to mean high tide, marshlands lying between mean high tide and five feet above mean sea level, and submerged lands lying below Mean low Tide, and over certain named waterways tributary to the Bay that are subject to tidal action. (Govt. Code Sec. 66610(a) and (e).) BCDC also has authority over salt ponds (areas that have been diked off from the Bay for the purpose of producing salt through solar evaporation) and managed wetlands (areas that have been diked off from the Bay and maintained as a duck hunting reserve or wildlife refuge). (Govt. Code Sec. 66610 and (d).) In addition, BCDC has authority over a shoreline band consisting of land 100 feet inland from and parallel to San Francisco Bay. (Govt. Code Sec. 66610(b)).

The BCDC's *San Francisco Bay Plan* contains the BCDC's enforceable policies and designates on Plan Maps the shoreline areas that are reserved for regional high-priority uses such as water-oriented recreation, seaports and airports. BCDC may issue permits for proposed projects in priority use areas if the use is consistent with the designated priority use as well as the other provisions of the McAteer-Petris Act and the Bay Plan. Portions of many priority use areas lie outside BCDC's 100-foot shoreline band jurisdiction and BCDC's authority in these areas is advisory only, except in cases where federal consistency applies.

Bay Plan Map 7 designates Moffett Field as an airport priority use area and the Plan Map policy note regarding Moffett Field states "Moffett Naval Air Station - If and when not needed by the Navy, site should be evaluated for commercial airport by regional airport system study. (Moffett NAS not within BCDC permit jurisdiction.)" Although most of the area proposed for development under the NADP is outside BCDC permit jurisdiction, all of Moffett Field is subject to BCDC's coastal management program authority because Moffett

Field is either in or directly affects the coastal zone. As mentioned above, the CZMA requires that federal actions be consistent with state coastal zone management plans. NASA makes a consistency determination and obtains concurrence from BCDC where the BCDC plan has been approved by the Federal Coastal Zone Management Program in the Department of Commerce.

The NASA Ames Research Center is one mile south of the edge of the San Francisco Bay. The area proposed for development under the NADP is outside the permit jurisdiction of BCDC. In addition, federal agencies do not require permits from BCDC, but must be consistent with the *Bay Plan*. However, Alternatives 2, 3, 4 and 5 would require a new storm water retention basin pump in the area under BCDC permit jurisdiction if the pump is placed on Midpeninsula Regional Open Space District land. NASA would prepare a consistency determination for this pump relative to the *Bay Plan*.

NASA has prepared a consistency determination for the entire NADP project relative to the local coastal zone management program administered by BCDC, and submitted this determination to BCDC on April 12, 2002, with additional information submitted on May 29. This consistency determination concluded that the proposed NADP would be consistent to the maximum extent practicable with the *Bay Plan*, the McAteer-Petris Act and the Coastal Zone Management Act.

6. Endangered Species Act

Section 7 of the Federal Endangered Species Act (FESA) of 1973 protects fish and wildlife species that are listed as threatened or endangered, and their habitats. Federal agencies are required to consult with the US Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat.

In order for a proposed federal action to comply with Section 7 of the Act, a biological assessment (BA) is typically prepared. NASA has prepared a BA that documents the action's expected impacts and proposes mitigation to

compensate for those impacts. Section 78 consultation with the USFWS initiated during the scoping phase for the plan indicated that a formal consultation will be required. The BA would be available to assist the USFWS in continuing to ensure that the Draft Plan and alternatives are in compliance with federal law.

As explained in Sections 3.9 and 4.9, none of the proposed alternatives would impact federally-listed species or their habitat.

7. Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918, administered by the USFWS, makes it unlawful to "take" (i.e., kill, harm, or harass) any migratory bird listed in 50 CFR 10, including their nests, eggs, or products. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many others. The Migratory Bird Executive Order of January 11, 2001, directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act, and defines the responsibilities of each federal agency taking actions that have or are likely to make, a measurable affect on migratory bird populations. All project actions within NASA must comply with this act; therefore, they cannot result in unauthorized take of migratory birds.

Migratory birds in the study area are described in Section 3.9. Mitigation measures identified in Section 4.9 of this Draft EIS would prohibit disturbance of active nests, protect birds from predation, or ensure that protected bird species that are nesting not be destroyed or disturbed by clearing, construction or demolition activities.

8. National Historic Preservation Act

Section 106 of the NHPA requires that a federal undertaking that could affect a property listed on the National Register of Historic Places (NRHP) or eligible for listing on the register be evaluated, with the participation of preservation agencies and the public. This law requires the agency responsible for the proposed undertaking to take historic properties into account, but it does not prohibit the agency from damaging or destroying the resources.

As described in Section 3.13, the Unitary Plan Wind Tunnel Complex is listed on the NRHP as a historic landmark. A Section 106 survey also led to the listing of the Shenandoah Plaza Historic District on the NRHP. In other Section 106 reviews, a total of three additional structures on the Ames Campus have been nominated for NRHP listing.

Within the Ames Campus, there would be no impacts on any of the buildings listed or eligible for listing on the NRHP. All demolition, rehabilitation, and construction within the Shenandoah Plaza Historic District would be in accordance with Section 106.

9. Archaeological Resources Protection Act

The Archaeological Resources Protection Act of 1979 defines archaeological resources; requires federal permits for excavation; provides for curation of materials, records, and other data; provides for confidentiality of archaeological site locations; and in the 1988 amendment, requires the inventorying of public lands for archaeological resources. In addition, Section 110 of the NHPA specifics that archaeological resources must be taken into consideration before implementing any federal action.

As discussed in Section 3.13, none of the archaeological sites previously recorded at Ames Research Center are considered significant enough to be included in the National Register of Historic Places (NRHP). However, there are several potential archaeologically sensitive areas within Ames Research Center. As discussed in Section 4.13, considerations have been made for dealing with human remains and/or cultural materials that may be found in the process of implementing the NADP. Construction in affected areas would not resume until the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) had been satisfied.

10. American Indian Religious Freedom Act

The American Indian Religious Freedom Act makes it a policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians their inherent right of freedom to believe, express, and exercise their traditional

religions. The act allows them access to sites, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rights. It further directs various Federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with Native traditional religious leaders to determine changes necessary to protect and preserve Native American cultural and religious practices. Copies of the Draft EIS are being sent to the Amah Tribe of Ohlone Costanoan Indians.

11. Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act of 1990 as amended, outlines the federal government's responsibility for the treatment and ultimate disposition of human burials and grave-related materials. The Act required consultation with certain Native American communities if circumstances regarding human remains, associated artifacts, or objects of cultural patrimony arise. As discussed in Section 4.13, the Native American Heritage Commission would be consulted in the event that human remains are discovered that the Coroner deems are not subject to his or her authority.

12. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

CERCLA provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, the Environmental Protection Agency (EPA) was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. Federal agencies are not eligible for Superfund dollars, but are required to fund environmental clean-up within their own budget authority.

EPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and

other small party settlements. EPA also recovers costs from financially viable individuals and companies once a response action has been completed.

EPA is authorized to implement the Act in all 50 states and U.S. territories. Superfund site identification, monitoring, and response activities in states are coordinated through the state environmental protection or waste management agencies.

As noted in Sections 3.7 and 4.7, the Regional Plume is related to the EPA-designated MEW and Naval Air Station Moffett Field Superfund sites under CERCLA. NASA is cooperating fully with the EPA, the MEW companies and the Navy to allow for remediation of the Regional Plume.

13. Solid Waste Disposal Act

Under the Solid Waste Disposal Act, a federal agency disposing of waste at a permitted waste disposal site must comply with all appropriate state and local laws. The California Integrated Waste Management Act of 1989 requires cities and counties to divert solid waste from the waste stream, which can be achieved through a reduction in materials use, reuse, and recycling. Please see discussion under Executive Order 13101 (Waste Reduction) for additional information. As stated in Section 3.6, Ames Research Center has implemented recycling programs to help reduce waste.

NASA has contracts with Southbay Maintenance and Stevens Creek Disposal for solid waste disposal and recycling at Ames Research Center. Waste is disposed of at the Newby Island Landfill in Milpitas. An analysis of solid waste impacts, which is described in Section 4.6, found that there would be no significant impact from the implementation NADP.

C. Compliance with Title 14 of the National Aeronautics and Space Administration Act

The proposed project includes development on floodplain areas within Moffett Field. Therefore, this section evaluates the floodplain impacts associated with the proposed NADP. This evaluation responds to key issues necessary to address the requirements of Title 14, Subpart 1216.2. Section 1216.205(a) of the National Aeronautics and Space Administration Act.

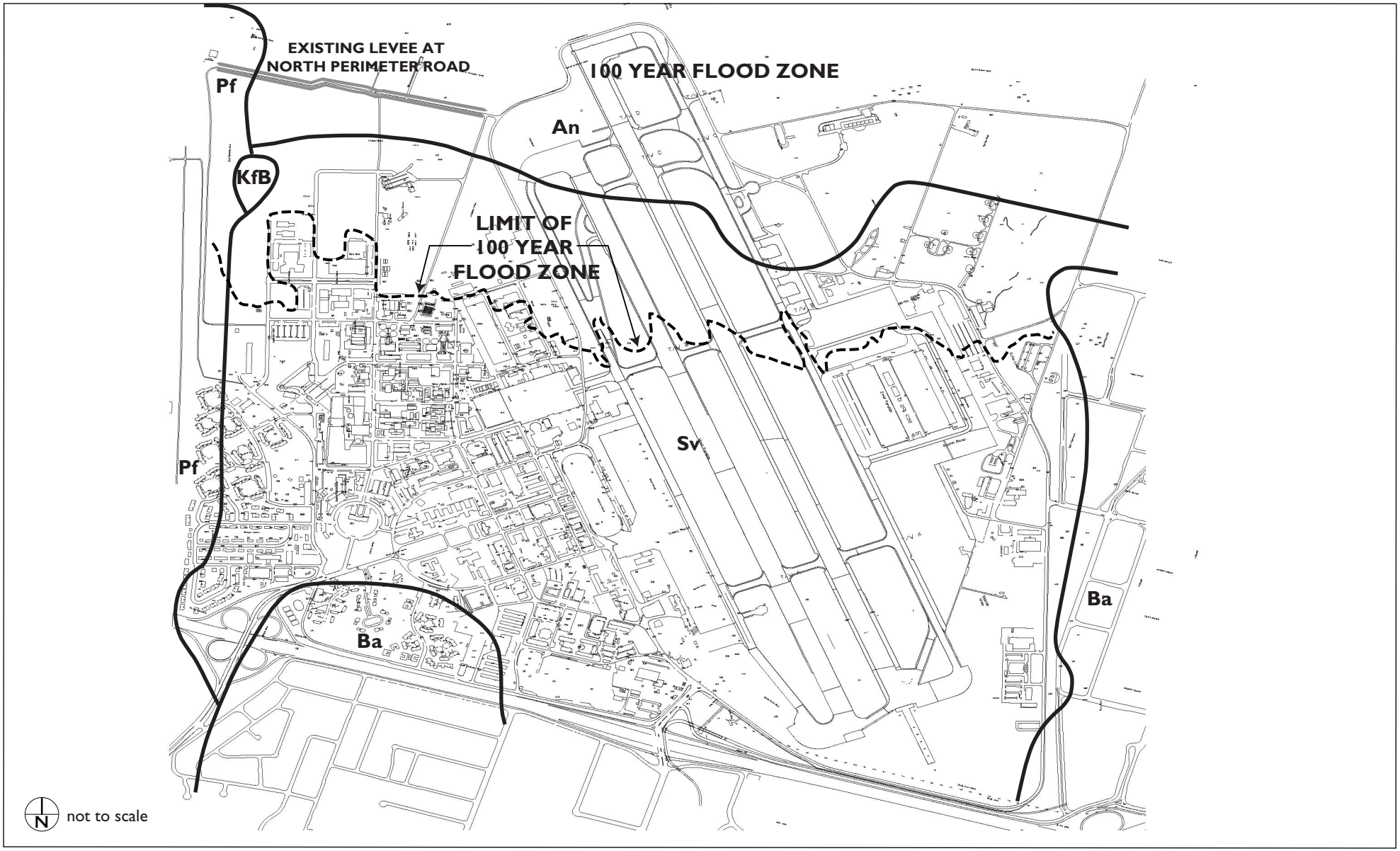
1. Regulatory Background

Title 14, Subpart 1216.2 requires that projects affecting floodplains or wetlands be evaluated relative to potential harm to lives and property, the natural and beneficial values of floodplains and wetlands, and the cumulative impacts of multiple actions over the long term.

The evaluation is to include (1) positive and negative impacts (beneficial and harmful); (2) concentrated and dispersed impacts (impacts on-site, near site and remote from the site); and (3) short and long-term impacts (include temporary changes and those that take the form of delayed changes resulting from the cumulative effects of many individual actions). The purpose is to compare benefits of floodplain improvements, such as health and safety with disbenefits such as loss of open space.

Factors that must be considered include (1) the anticipated design water level, (2) sheet flow depth, (3) flow velocity, (4) groundwater flow and recharge, (5) tidal flow, (6) topography, (7) water quality, (8) vegetation, and (9) aquatic habitats.

Section 1216.204(b) requires that the evaluation be based on the approved floodplain map. The evaluation presented in this FPEIS is based on the 2000 Draft Moffett Field Environmental Resources Document, Soils and Flood Zone Map, shown in Figure 6.5-1. The most current approved floodplain map was prepared in December 1978. The December 1978 map used a lower tidal elevation than the 2000 map and is less conservative for the project areas. The



Source: Figure 12-1, Soils and Flood Zone Map, Moffett Field Environmental Resources Document.

100 Year Flood Zone	- - - - - - -	**Pacheco Loams, Clay Substratum**	**Pf**
Sunnyvale SIte Clay, Drained	**Sv**		
Bayshore Clay Loam	**Ba**	**Kitchen Middens**	**KfB**
Alviso Clay	**An**		

FIGURE 6.5-1

SOILS AND FLOOD ZONE MAP

2000 map has been used because it is more recent and uses a more conservative 100-year tidal water level.

2. Rationale for Floodplain Development

Housing is an important component of the overall project. As evidenced by the comment letters presented in Volume 3 of this Final EIS, there is strong support for housing under the NADP. Housing is a required mitigation to address concerns about the jobs/housing imbalance in the area. As part of the NADP, NASA proposes to construct residential housing within the 100-year tidal floodplain limits for Moffett Field. The sites that are not within these limits are not suitable for housing. NASA is limited by where it can locate housing for a number of reasons, including proximity to potentially contaminated sites and incompatible uses, and thus has chosen Bay View, which is within the 100-year floodplain, as the most appropriate location for housing. Some housing is also planned in the NRP. Although NASA plans to mitigate the impacts of site contamination in the NRP so that it does not cause undue risk to the building occupants located over the Superfund plume, the mitigatable risk is not low enough to allow other portions of the NRP to be used for housing. Noise near the wind tunnels and airfield make locations near these facilities inappropriate for housing as well.

At this time NASA does not think it is appropriate to study housing on the east side of Moffett Field since the CANG does not plan to relocate. NASA feels that the Eastside/Airfield is better dedicated to continued use of the airfield as a national and local resource. The golf course on the east side is used as a safety zone for the ordnance storage of the military tenants and therefore it is not an appropriate area for housing.

For the reasons discussed above, NASA has determined that Bay View is the only reasonable and possible location for building the full amount of housing that is required, beyond the amount already provided in the military housing areas and planned for Parcel 6.

3. Existing Floodplain and Wetlands

As shown in Figure 6.5-1, portions of the proposed Bay View Residential Area are within the 100-year tidal floodplain. Portions of the existing Eastside/Airfield and Ames Campus are also within the 100-year tidal floodplain, but all proposed improvements in these two areas are outside of the 100-year tidal floodplain.

As discussed in Section 3.9, there are wetland areas on the Moffett Field site. However, none of these wetland areas is proposed for development. Potential impacts to the wetlands are discussed in Section 4.9. Therefore, no further discussion of wetlands is included here.

4. Alternative Actions

Relative to floodplain impacts, three alternatives were assessed for the proposed project: Alternative 1 (No Project Alternative), Alternative 3, and Alternative 5 (including mitigation). From the perspective of potential impacts to floodplains, Alternatives 2 and 4 are the same as Alternative 5, so are not discussed separately here.

It was determined that Alternative 1 would have no impact on floodplains because no development would occur there. However, Alternative 1 does not meet the goals of the project and does not provide the many benefits that would be provided by the implementation of the Preferred Alternative. Alternative 3 would not result in any change to floodplains. Alternative 3 proposes no development within the Bay View area, which lies in the floodplain zone. While development in Alternative 3 would occur outside the base floodplain, it would not meet NASA's goals for the NADP.

It was determined that Alternative 5 (including mitigation) was the Preferred Alternative because it best met the project objectives while minimizing environmental impacts. This alternative proposes building within the 100-year floodplain limit. This construction would primarily consist of housing. No development would occur in wetlands.

5. Floodplain Impacts of the Preferred Alternatives

The project as proposed under Alternatives 1 and 3 have no significant impacts on the floodplain boundaries delineated from the 2000 Environmental Resources Document Map. Therefore, only the Preferred Alternative is evaluated in detail below.

a. Project Characteristics Relative to Floodplains

As shown in Figure 6.5-2, filling is proposed for the portions of the Bay View residential area that are within the floodplain. Proposed minimum site grades of 7.5 feet would allow a maximum ponding depth of 152 millimeters (6 inches) on roadways during the 100-year tidal event. Building finished floors would be at an elevation of 9.0 feet, at least 305 millimeters (1 foot) above the 100-year tidal water level. Fill that is placed to raise grades above a 100-year tide elevation would not cause changes in tidal water levels at other locations and would not have a cumulative impact.

During major storm events, flooding occurs in the northern portion of Ames Research Center. To reduce the occurrence of flooding, more efficient management of the existing storage available in the stormwater retention pond north of Ames Research Center will be performed. This could be achieved either through the implementation of proactive use of the mobile pumps, which are currently employed in a reactive fashion, or through the installation of a permanent pump station. The permanent pump station is the preferred option for two reasons: (1) the timing and quantity of the discharge from the pump station could be automatically tied to the water level of Stevens Creek, based on the requirements of the Santa Clara Valley Water District; and (2) the residual water level in the stormwater retention pond, after a cycle of pumping had been completed, could be set at a specific elevation based on the preferences of Midpeninsula Regional Open Space District.

As shown on Figure 6.5-1, the levee adjacent to the North Perimeter Road does not isolate the stormwater retention pond from lands south of North Perimeter Road. The ponding in the area north of Bay View during a 100-year storm event is a form of unintentional stormwater detention. Much of this

not to scale

Fill

Approximate Location of 100-year Floodplain

FIGURE 6.5-2

PROPOSED BAY VIEW FILL

ponded water results from runoff that is generated from other portions of Ames Research Center, rather than from Bay View runoff. Placement of fill within Bay View would reduce the total available stormwater detention. The resulting increase in the depth of retained flow in the stormwater retention pond and the area north of Bay View would be minimal.

The potential increase in depth of ponding could be mitigated by more efficient management of the stormwater retention pond. The water level in the retention pond could be pumped down prior to the start of a major storm event to compensate for the decrease in available stormwater storage volume.

With development, there is a potential that increased impervious area would have a detrimental impact on floodplains by decreasing water quality and increasing the volume and peak rate of stormwater runoff. The NADP proposes to mitigate water quality impacts by providing bioswales for the treatment of stormwater runoff. Increases in runoff rates and volumes would be mitigated using measures to maximize pervious surfaces including green roofs and conveyance through bioswales. For the Bay View area, stormwater detention basins would be included to increase potential percolation and reduce peak discharge rates. The stormwater detention basins in the Bay View area would provide roughly 26,760 cubic meters (35,000 cubic yards) of storage.

For the NASA Research Park (NRP) area, stormwater detention is proposed within the piped system to reduce the peak discharge rate. The increased size of the conveyance piping, with restrictive discharge structures, would provide roughly 15,290 cubic meters (20,000 cubic yards) of storage. Because the NRP area is already relatively impervious, no increase in runoff volume is expected with the proposed development. Development within the Eastside/Airfield and the Ames Campus would consist of upgrades to existing facilities, and no floodplain impacts are anticipated.

b. Direct Impacts

The following summarizes the direct impacts that the proposed project, under the Preferred Alternative, would have on the floodplain areas at Moffett Field:

- Design Water Level - With the proposed mitigation measures, there would be no increase in design water level of the tidal flow.
- Overland Sheet Flow - Storm drainage facilities proposed as a part of the proposed NRP project would lead to a reduction in the amount of sheet flow across the site during the 100-year storm event. This would provide a benefit.
- Flow Velocity - Measures are proposed as a part of the project to maintain current flow velocities at the project discharge points.
- Ground Water Flow and Recharge - The site soils consist of clayey materials, including bay mud. These soils have a low permeability. Upper layer groundwater is not potable. Therefore, changes in groundwater recharge would be minor and would not create significant impacts.
- Tidal Flow - The project area is protected from tidal flows by a series of levees. The site would be raised to above the 100-year tide elevation of 8.0.[1] The increase in grades would ensure that no flooding of structures would result from levee failure.
- Topography - Grading would occur to allow for site development and to raise the site above the 100-year tide elevation.
- Water Quality - As explained in Section 4.5, mitigation measures including bioswales and green roofs are proposed to maintain water quality. These are standard accepted water quality measures and would reduce impacts to less-than-significant levels.
- Vegetation - As explained in Section 4.9, there would be no impacts to special-status plants.
- Aquatic Habitats -As explained in Section 4.9, there would be no impacts to aquatic habitats.

[1] San Francisco Bay Tidal Stage vs. Frequency Study, by the US Army Corps of Engineers, October 1984. (Elevations are all given in feet in this floodplain analysis to match Study results.)

c. Cumulative Impacts

With the proposed mitigation measures outlined above, there would be no off-site impact on 100-year tidal water levels, overland sheet flow, flow velocity, groundwater flow and recharge, tidal flow, or water quality associated with the proposed project. As long as other future development adheres to these standards, there would be no adverse cumulative impacts with future development.

6. Additional Information

The proposed project would involve changes in land use. Thus, as recommended by the regulations, this evaluation makes the following additional points:

- The Notices of Availability of the Draft Programmatic EIS and this Final Programmatic EIS have been published in the Federal Register.
- Fill would be required in the Bay View area in order to prevent flooding. Fill would be used to bring the finished grade up to a finished height of 2 meters (7 feet) along the northern edge of the Bay View area, and slope upward to the south to conform to the existing ground at higher elevations. A summary of the fill requirements is provided in the Executive Summary, Section H.2.
- The filling process would not affect natural or beneficial floodplain values.
- Numerous federal, State, local and regional agencies and organizations were involved in the preparation of this EIS. Those that commented on the Draft EIS are listed in Chapter 12, while their comment letters follow in Chapter 13. Individuals who contributed in other ways to the preparation of this EIS are listed in Chapter 8.